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CLAIMS

1. A communication system comprising a first information processor, a second information processor, a first communication control unit for controlling the communication of the first information processor, a second communication control unit for controlling the communication of the second information processor, and a server for establishing communication between the first information processor and second information processor,

wherein the first information processor includes:

a bubble packet transmitter for transmitting a bubble packet for leaving transmission record in the first communication control unit to the second communication control unit by way of the first communication control unit, and

a reply packet receiver for receiving the reply packet transmitted from the second information processor by way of the second communication control unit, to the bubble packet transmitting port which is a port of the first communication control unit used in transmission of the bubble packet, and

the second information processor includes:

a reply packet transmitter for transmitting the reply packet to one or more ports including at least the bubble packet transmitting port.

2. The communication system of claim 1,

wherein the first information processor further includes:

a range detection packet transmitter for transmitting a range detection packet for detecting the range of ports including the bubble packet transmitting port to the server,

the server further includes:

a range detector for receiving the range detection packet, and detecting the

range of ports including the bubble packet transmitting port on the basis of the range detection packet, and

a range transmitter for transmitting the range information as the information showing the range of ports including the bubble packet transmitting port detected by 5 the range detector to the second information processor,

the second information processor further includes:

a range receiver for receiving the range information, and

the reply packet transmitter transmits the reply packet to the ports in the range indicated by the range information.

10   3. The communication system of claim 1 or 2,

wherein the server further includes:

a target port transmitter for transmitting bubble packet for transmitting the target port information for transmitting bubble packet showing the position of the target port for transmitting bubble packet as the port of target of transmitting the 15 bubble packet in the second information control unit, to the first information processor,

the first information processor further includes:

a target port receiver for transmitting bubble packet for receiving the target port information for transmitting bubble packet, and

20   the bubble packet transmitter transmits the bubble packet to the target port for transmitting bubble packet indicated by the target port information for transmitting bubble packet.

4. The communication system of claim 1 ,

wherein the first information processor further includes:

25   a port number differential detection packet transmitter for transmitting a port

number differential detection packet for detecting the port number differential in the first communication control unit to the server by way of the first communication control unit,

the server further includes:

5   a port number differential detector for receiving the port number differential detection packet, and detecting the port number differential in the first communication control unit on the basis of the port number differential detection packet, and

a port number differential information transmitter for transmitting the port

10   number differential information as the information showing the port number differential of the first communication control unit detected by the port number differential detector to the second information processor,

the second information processor further includes:

a port number differential information receiver for receiving the port number

15   differential information, and

the reply packet transmitter transmits the reply packet in every port number differential indicated by the port number differential information.

5. A first information processor communicating with a second information processor by way of a first communication control unit for controlling the

20   communication of the first information processor and a second communication control unit for controlling the communication of the second information processor, comprising:

a bubble packet transmitter for transmitting a bubble packet for leaving transmission record in the first communication control unit to the second

25   communication control unit by way of the first communication control unit, and

a reply packet receiver for receiving the reply packet transmitted from the second information processor by way of the second communication control unit to the bubble packet transmitting port which is a port of the first communication control unit, used in transmission of the bubble packet.

5   6. The first information processor of claim 5, further comprising:

a range detection packet transmitter for transmitting a range detection packet used for detecting the range of ports including the bubble packet transmitting port.

7. The first information processor of claim 6, wherein the range detection packet transmitter transmits the range detection packet before and after transmission

10   of the bubble packet by the bubble packet transmitter.

8. The first information processor of claim 7, wherein the range detection packet transmitter transmits the range detection packet to different addresses before and after transmission of the bubble packet.

9. The first information processor of claim 7, wherein the range detection

15   packet transmitter transmits the range detection packet by using the port newly assigned in the first information processor before and after transmission of the bubble packet.

10. The first information processor of any one of claims 5 to 9, further comprising:

20   a target port receiver for transmitting bubble packet for receiving the target port information for transmitting bubble packet showing the position of the target port for transmitting bubble packet as the port of target of transmitting the bubble packet in the second information control unit,

wherein the bubble packet transmitter transmits the bubble packet to the target

25   port for transmitting bubble packet indicated by the target port information for

transmitting bubble packet.

11. The first information processor of claim 10, wherein the target port for transmitting bubble packet is a port for transmitting and receiving information with the server for establishing communication between the first information processor and second information processor by the second information processor.

12. The first information processor of claim 5, further comprising:

a port number differential detection packet transmitter for transmitting a port number differential detection packet for detecting the port number differential in the first communication control unit by way of the first communication control unit.

13. The first information processor of claim 5, wherein the first communication control unit receives a bubble packet from the second information processor for leaving the transmission record in the second communication control unit by way of the second communication control unit, and further includes:

a reply packet transmitter for transmitting a reply packet to one or more ports including at least the port of the second communication control unit used in transmission of the bubble packet from the second information processor.

14. The first information processor of claim 13, further comprising:

a range receiver for receiving the range information as the information showing the range of ports for transmitting the reply packet,

wherein the reply packet transmitter transmits the reply packet to the ports in the range indicated by the range information.

15. The first information processor of claim 13 or 14, further comprising:

a port number differential information receiver for receiving the port number differential information as the information showing the port number differential in the second communication control unit,

wherein the reply packet transmitter transmits the reply packet in every port number differential indicated by the port number differential information.

16. A first information processor communicating with a second information processor by way of a first communication control unit for controlling the communication of the first information processor and a second communication control unit for controlling the communication of the second information processor,

wherein the first communication control unit receives a bubble packet from the second information processor for leaving the transmission record in the second communication control unit by way of the second communication control unit, comprising:

a reply packet transmitter for transmitting a replay packet to one or more ports including as the least the port of the second communication control unit used in transmission of the bubble packet from the second information processor.

17. The first information processor of claim 16, further comprising:

a range receiver for receiving the range information as the information showing the range of ports for transmitting the reply packet,

wherein the reply packet transmitter transmits the reply packet to the ports in the range indicated by the range information.

18. The first information processor of claim 16 or 17, further comprising:

a port number differential information receiver for receiving the port number differential information as the information showing the port number differential in the second communication control unit,

wherein the reply packet transmitter transmits the reply packet in every port number differential indicated by the port number differential information.

19. A server for establishing communication between a first information

processor and a second information processor by way of a first communication control unit for controlling the communication of the first information processor and a second communication control unit for controlling the communication of the second information processor, comprising:

5   an information transmitter and receiver for transmitting and receiving information between the first information processor and second information processor,

a characteristic determination unit for determining the characteristic of the first communication control unit and second communication control unit, and

10   a determination unit for transmission and reception for determining either one of the first information processor and second information processor at the transmission side (transmission side information processor) and other at the reception side (reception side information processor) depending on the judging result by the characteristic determination unit.

15   20. The server of claim 19, further comprising:

a target port transmitter for transmitting bubble packet for transmitting the target port information for transmitting bubble packet showing the position of the target port for transmitting bubble packet as the port of target of transmission of bubble packet for leaving the transmission record in the communication control unit

20   (transmission side communication control unit) for controlling the communication of the transmission side information processor, by the transmission side information processor in the communication control unit (reception side communication control unit) for controlling the communication of the reception side information processor, to the transmission side information processor.

25   21. The server of claim 20, wherein the target port for transmitting bubble

packet showing the target port information for transmitting bubble packet is the port of the reception side communication control unit used in communication between the information transmitter and receiver and the reception side information processor.

5   22. The server of claim 20 or 21, further comprising:

a range detector for receiving the range detection packet for detecting the range of ports including the bubble packet transmitting port as the port of the transmission side communication control unit used in transmission of the bubble packet from the transmission side information processor to the target port for

10   transmitting bubble packet in the reception side communication control unit and detecting the range of ports including the bubble packet transmitting port, and

a range transmitter for transmitting the range information as the information showing the range of ports including the bubble packet transmitting port detected by the range detector.

15   23. The server of claim 22, wherein the range detector detects on the basis of the range detection packet transmitted to plural addresses.

24. The server of claim 20, further comprising:

a port number differential detector for receiving the port number differential detection packet for detecting the port number differential in the transmission side

20   communication control unit transmitted from the transmission side information processor by way of the transmission side communication control unit and detecting the port number differential in the transmission side communication control unit on the basis of the port number differential detection packet, and

a port number differential information transmitter for transmitting the port

25   number differential information as the information showing the port number

differential of the transmission side communication control unit detected by the port number differential detector.

25. A communication method for communicating between a first information processor and a second information processor by way of a first communication control unit for controlling the communication of the first information processor and a second communication control unit for controlling the communication of the second information processor, comprising:

a bubble packet transmitting step of transmitting a bubble packet to the second communication control unit from the first information processor for leaving transmission record in the first communication control unit by way of the first communication control unit, and

a reply step of transmitting a reply packet to one or more ports including at least the bubble packet transmitting port as the port of the first communication control unit used in transmitting of the bubble packet at the bubble packet transmitting step, from the second information processor by way of the second communication control unit.

26. The communication method of claim 25, further comprising:

a first address acquiring step of acquiring the address of the second communication control unit by the first information processor,

wherein the bubble packet transmitting step is characterized by transmitting the bubble packet to the address acquired at the first address acquiring step.

27. The communication method of claim 25 or 26, further comprising:

a second address acquiring step of acquiring the address of the first communication control unit by the second information processor,

wherein the reply step is characterized by transmitting the reply packet to the

address acquired at the second address acquiring step.

28. The communication method of claim 25, further comprising:

a range detecting step of detecting the range of ports including the bubble packet transmitting port,

5 wherein the reply step is characterized by transmitting the reply packet to the ports in the range detected at the range detecting step.

29. The communication method of claim 28, wherein the range detecting step includes:

a step of transmitting a first range detection packet used in detection of the

10 range before transmission of the bubble packet by the first information processor,

a step of receiving the first range detection packet and detecting the position of the port of the first communication control unit used in transmission of the first range detection packet,

a step of transmitting a second range detection packet used in detection of the

15 range after transmission of the bubble packet by the first information processor, and

a step of receiving the second range detection packet, and detecting the position of the port of the first communication control unit used in transmission of the second range detection packet.

30. The communication method of claim 29, wherein the first range detection

20 packet and second range detection packet are transmitted to different addresses.

31. The communication method of claim 29, wherein the first range detection packet and second range detection packet are transmitted by using ports newly assigned in the first information processor.

32. The communication method of claim 25, wherein the target port for

25 transmitting bubble packet as the port of target of transmission of the bubble packet

in the second communication control unit is the port for transmitting and receiving information with the server for establishing communication between the first information processor and second information processor by the second information processor.

5   33. The communication method of claim 25, further comprising:

a characteristic determination step of determining the characteristic of first communication control unit and/or second communication control unit, and

an exchange step of exchanging the roles of the first information processor and second information processor depending on the characteristic judged at the

10   characteristic determination step.

34. The communication method of claim 25, wherein when the reply packet is transmitted to two or more ports at the reply step, they are transmitted at the port number differential in the first communication control unit.

35. The communication method of claim 34, further comprising:

15   a port number differential detecting step of detecting the port number differential in the first communication control unit,

wherein the reply step is characterized by transmitting the reply packet at the interval of port differential number detected at the port number differential detecting step.

20   36. A program for causing a computer to execute the process in a first information processor for communicating with a second information processor by way of a first communication control unit for controlling the communication of the first information processor and a second communication control unit for controlling the communication of the second information processor, comprising:

25   a bubble packet transmitting step of transmitting a bubble packet to the second

communication control unit for leaving transmission record in the first communication control unit by way of the first communication control unit, and

a reply packet receiving step of receiving a reply packet transmitted to the bubble packet transmitting port as the port of the first communication control unit used in transmitting of the bubble packet from the second information processor by way of the second communication control unit.

37. The program of claim 36, wherein the computer further executes a range detection packet transmitting step of transmitting a range detection packet used in detection of range of ports including the bubble packet transmitting port.

38. The program of claim 37, wherein the range detection packet transmitting step is characterized by transmitting the range detection packet before and after transmission of bubble packet at the bubble packet transmitting step.

39. The program of claim 38, wherein the range detection packet transmitting step is characterized by transmitting the range detection packet to different addresses before and after transmission of bubble packet.

40. The program of claim 38, wherein the range detection packet transmitting step is characterized by transmitting the range detection packet by using ports newly assigned in the first information processor before and after transmission of bubble packet.

41. The program of any one of claims 36 to 40, wherein the computer further executes a receiving step of target port for transmitting bubble packet of receiving target port information for transmitting bubble packet as the port of target of transmission of the bubble packet in the second communication control unit, and

the bubble packet transmitting step is characterized by transmitting the bubble packet to the target port for transmitting bubble packet indicated by the target port

information for transmitting bubble packet.

42. The program of claim 41, wherein the target port for transmitting bubble packet is a port for transmitting and receiving information with the server for establishing communication between the first information processor and second

5 information processor by the second information processor.

43. The program of claim 36, wherein the computer further executes a port number differential detection packet transmitting step of transmitting a port number differential detection packet for detecting the port number differential in the first communication control unit by way of the first communication control unit.

10 44. The program of claim 36, wherein the first communication control unit receives a bubble packet from the second information processor for leaving the transmission record in the second communication control unit by way of the second communication control unit, and

the computer further executes a reply packet transmitting step of transmitting a

15 reply packet to one or more ports including at least the port of the second communication control unit used in transmission of the bubble packet from the second information processor.

45. The program of claim 44, wherein the computer further executes a range receiving step of receiving the range information as the information showing the

20 range of ports for transmitting the reply packet, and

the reply packet transmitting step is characterized by transmitting the reply packet to the ports in the range indicated by the range information.

46. The program of claim 44 or 45, wherein the computer further executes a port number differential receiving step of receiving the port number differential

25 information as the information showing the port number differential in the second

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communication control unit, and

the reply packet transmitting step is characterized by transmitting the reply packet in every port number differential indicated by the port number differential information.

5   47. A program for causing a computer to execute the process in a first information processor for communicating with a second information processor by way of a first communication control unit for controlling the communication of the first information processor and a second communication control unit for controlling the communication of the second information processor,

10   wherein the first communication control unit receives a bubble packet from the second information processor for leaving the transmission record in the second communication control unit by way of the second communication control unit, and

the computer further executes a reply packet transmitting step of transmitting a reply packet to one or more ports including at least the port of the second

15   communication control unit used in transmission of the bubble packet from the second information processor.

48. The program of claim 47, wherein the computer further executes a range receiving step of receiving the range information as the information showing the range of ports for transmitting the reply packet, and

20   the reply packet transmitting step is characterized by transmitting the reply packet to the ports in the range indicated by the range information.

49. The program of claim 47 or 48, wherein the computer further executes a port number differential receiving step of receiving the port number differential information as the information showing the port number differential in the second

25   communication control unit, and

the reply packet transmitting step is characterized by transmitting the reply packet in every port number differential indicated by the port number differential information.

50. A program for causing a computer to execute the process in a server for establishing communication between a first information processor and a second information processor by way of a first communication control unit for controlling the communication of the first information processor and a second communication control unit for controlling the communication of the second information processor, wherein the computer executes:

an information transmitting and receiving step of transmitting and receiving information between the first information processor and second information processor,

a characteristic determining step of determining the characteristic of the first communication control unit and second communication control unit, and

a transmission and reception determining step of determining either one of the first information processor and second information processor at transmission side (transmission side information processor) and other at reception side (reception side information processor) depending on the judging result at the characteristic determining step.

51. The communication system of claim 1,

wherein the first information processor further includes:

a range detection packet transmitter for transmitting a range detection packet used for detecting the range of ports including the bubble packet transmitting port to the server,

a detection port information receiver for receiving the detection port

information showing the position of the port of the first communication control unit allowing to pass the range detection packet,

a range detector for detecting the range of ports including the bubble packet transmitting port on the basis of the detection port information received in the

5   detection port information receiver, and

a range transmitter for transmitting the range information as the information showing the range of ports including the bubble packet transmitting port detected by the range detector,

the server further includes:

10   a detector for detecting port number for receiving the range detection packet and detecting the position of the port of the first communication control unit allowing to pass the range detection packet, and

a detection port information transmitter for transmitting the detection port information showing the position of the port detected by the detection port detector

15   to the first information processor,

the second information processor further includes:

a range receiver for receiving the range information, and

the reply packet transmitter transmits the reply packet to the ports in the range indicated by the range information.

20   52. The communication system of any one of claims 1, 2, and 51,

wherein the first information processor further includes:

a port number differential detection packet transmitter for transmitting a port number differential detection packet for detecting the port number differential in the first communication control unit to the server by way of the first communication

25   control unit,

a port number differential detection port information receiver for receiving the port number differential detection port information showing the position of the port of the first communication control unit allowing to pass the port number differential detection packet,

5   a port number differential detector for detecting the port number differential in the first communication control unit on the basis of the port number differential detection port information received in the port number differential detection port information receiver, and

a port number differential information transmitter for transmitting the port

10   number differential information as the information showing the port number differential of the first communication control unit detected in the port number differential detector to the second information processor by way of the server,

the server further includes:

a port number differential detection port detector for receiving the port number

15   differential detection packet and detecting the position of the port of the first communication control unit allowing to pass the port number differential detection packet, and

a port number differential detection port information transmitter for transmitting the port number differential detection port information showing the

20   position of the port detected by the port number differential detection port detector to the first information processor,

the second information processor further includes:

a port number differential information receiver for receiving the port number differential information, and

25   the reply packet transmitter transmits the reply packet in every port number

differential indicated by the port number differential information.

53. The communication system of claim 51,

wherein the server further includes:

a target port transmitter for transmitting bubble packet for transmitting the target port information for transmitting bubble packet showing the position of the target port for transmitting the bubble packet as the port of target for transmitting the bubble packet in the second communication control unit, to the first information processor,

the first information processor further includes:

a target port receiver for transmitting bubble packet for receiving the target port information for transmitting bubble packet, and

the bubble packet transmitter transmits the bubble packet to the target port for transmitting bubble packet showing the target port information for transmitting bubble packet.

54. The first information processor of any one of claims 6 to 9, further comprising:

a detection port information receiver for receiving the detection port information showing the position of the port of the first communication control unit allowing to pass the range detection packet,

a range detector for detecting the range of ports including the bubble packet transmitting port on the basis of the detection port information received in the detection port information receiver, and

a range transmitter for transmitting the range information as the information showing the range of ports including the bubble packet transmitting port detected by the range detector.

55. The first information processor of claim 54, further comprising:

a target port receiver for transmitting bubble packet for receiving the target port information for transmitting bubble packet showing the position of the target port for transmitting the bubble packet as the port of target for transmitting the

5   bubble packet in the second communication control unit,

wherein the bubble packet transmitter transmits the bubble packet to the target port for transmitting bubble packet showing the target port information for transmitting bubble packet.

56. The first information processor of claim 55, further comprising:

10   a port number differential detection port information receiver for receiving the port number differential detection port information showing the position of the port of the first communication control unit allowing to pass the port number differential detection packet,

a port number differential detector for detecting the port number differential in

15   the first communication control unit on the basis of the port number differential detection port information received in the port number differential detection port information receiver, and

a port number differential information transmitter for transmitting the port number differential information as the information showing the port number

20   differential of the first communication control unit detected in the port number differential detector to the second information processor by way of the server.

57. A server for establishing communication between a first information processor and a second information processor by way of a first communication control unit for controlling the communication of the first information processor and

25   a second communication control unit for controlling the communication of the

second information processor, comprising:

    a detector for detecting port number for receiving a range detection packet for detecting the range of ports including the bubble packet transmitting port as the port of the first communication control unit used in transmission of bubble packet for

5   leaving the transmission record in the first communication control unit to the second communication control unit from the first information processor and detecting the position of the port of the first communication control unit allowing to pass the range detection packet, and

    a detection port information transmitter for transmitting the detection port

10   information showing the position of the port detected by the detection port detector to the first information processor.

    58. The server of claim 57, further comprising:

    a port number differential detection port detector for receiving a port number differential detection packet for detecting the port number differential in the first

15   communication control unit transmitted from the first information processor by way of the first communication control unit and detecting the position of the port of the first communication control unit allowing to pass the range detection packet on the basis of the port number differential detection packet, and

    a port number differential detection port information transmitter for

20   transmitting the detection port information showing the position of the port detected by the port number differential detection port detector to the first information processor.

    59. The program of any one of claims 37 to 40, wherein the computer further executes:

25   a detection port information receiving step of receiving the detection port

information showing the position of the port of the first communication control unit allowing to pass the range detection packet,

a range detecting step of detecting the range of ports including the bubble packet transmitting port on the basis of the detection port information received at

5   the detection port information receiving step, and

a range transmitting step of transmitting the range information as the information showing the range of ports including the bubble packet transmitting port detected at the range detecting step.

60. The program of claim 59, wherein the computer further executes:

10   a receiving step of target port for transmitting bubble packet of receiving the target port information for transmitting bubble packet indicating the position of the target port for transmitting bubble packet as the target port for transmitting the bubble packet in the second communication control unit,

wherein the bubble packet transmitting step is characterized by transmitting

15   the bubble packet to the target port for transmitting bubble packet indicated by the target port information for transmitting bubble packet.

61. The program of claim 60, wherein the computer further executes:

a port number differential detection port information receiving step of receiving the port number differential detection port information showing the

20   position of the port of the first communication control unit allowing to pass the port number differential detection packet,

a port number differential detecting step of detecting the port number differential in the first communication control unit on the basis of the port number differential detection port information received at the port number differential

25   detection port information receiving step, and

a port number differential transmitting step of transmitting the port number differential information as the information showing the port number differential of the first communication control unit detected at the port number differential detecting step to the second information processor by way of the server.

5   62.   The communication system of claim 53, wherein the target port information for transmitting bubble packet is the information showing the position of one or more target ports for transmitting the bubble packets, and

the bubble packet transmitter transmits the bubble packet to one or more target ports for transmitting bubble packet indicated by the target port information for 10   transmitting bubble packet.

63.   The first information processor of claim 55, wherein the target port information for transmitting bubble packet is the information showing the position of one or more target ports for transmitting the bubble packets, and

the bubble packet transmitter transmits the bubble packet to one or more target 15   ports for transmitting bubble packet indicated by the target port information for transmitting bubble packet.

64.   The first information processor of claim 63, wherein one or more target ports for transmitting the bubble packets showing the target port information for transmitting bubble packet include port assigning packet transmitting ports as ports 20   in the second communication control unit allowing to pass the port assigning packet transmitted from the second information processor for assigning the ports for transmitting the reply packet in the second communication control unit.

65.   The first information processor of claim 64, further comprising:

a port number differential information receiver for receiving the port number 25   differential information as the information showing the port number differential in

the second communication control unit,

wherein the bubble packet transmitter transmits the bubble packet in every port number differential indicated by the port number differential information.

66. The first information processor of claim 16, further comprising:

5   a port assigning packet transmitter for transmitting a port assigning packet for assigning the port for transmitting the reply packet in the first communication control unit,

wherein the reply packet transmitter transmits the reply packet from the port of the first information processor having transmitted the port assigning packet.

10   67. The first information processor of claim 66, further comprising a range detection packet transmitter for transmitting a range detection packet used for detecting the range of ports including the bubble packet transmitting port as the port in the first communication control unit used in transmission of port assigning packet.

68. The first information processor of claim 67, wherein the range detection

15   packet transmitter transmits the range detection packet before and after transmission of the port assigning packet by the port assigning packet transmitter.

69. The first information processor of claim 68, wherein the range detection packet transmitter transmits the range detection packet by using the port newly assigned in the first information processor before and after transmission of the port

20   assigning packet.

70. The first information processor of any one of claims 67 to 69, further comprising:

a detection port information receiver for receiving detection port information showing the position of the port of the first communication control unit allowing to

25   pass the range detection packet,

a range detector for detecting the range of ports including the port in the first communication control unit having transmitted the port assigning packet on the basis of the detection port information received in the detection port receiver, and

a target port transmitter for transmitting the target port information for

5 transmitting the bubble packet as the information showing the range of ports including the port of the first communication control unit having transmitted the port assigning packet detected by the range detector.

71. The first information processor of any one of claims 66 to 69, further comprising:

10 a port number differential detection packet transmitter for transmitting the port number differential detection packet for detecting the port number differential in the first communication control unit by way of the first communication control unit.

72. The first information processor of claim 71, further comprising:

a port number differential detection port information receiver for receiving the

15 port number differential detection port information showing the position of the port of the first communication control unit allowing to pass the port number differential detection packet,

a port number differential detector for detecting the port number differential in the first communication control unit on the basis of the port number differential

20 detection port information received in the port number differential detection port information receiver, and

a port number differential information transmitter for transmitting the port number differential information as the information showing the port number differential of the first communication control unit detected in the port number

25 differential detector to the second information processor by way of the server.

73. A server for establishing communication between a first information processor and a second information processor by way of a first communication control unit for controlling the communication of the first information processor and a second communication control unit for controlling the communication of the

5   second information processor, comprising:

a target port transmitter for transmitting bubble packet for transmitting the target port information for transmitting bubble packet showing the position of the target port for transmitting bubble packet as the port in the second communication control unit as the target for transmitting the bubble packet for leaving the

10   transmission record in the first communication control unit by the first information processor to the first information processor.

74.   The server of claim 73, wherein the target port information for transmitting bubble packet is the information showing the position of one or more target ports for transmitting the bubble packets, and

15   the one or more target ports for transmitting the bubble packets include the port assigning packet transmitting ports as the ports in the second communication control unit allowing to pass the port assigning packet transmitted from the second information processor when assigning the ports for transmitting the reply packet to be transmitted from the second information processor to transmission of the bubble

20   packet.

75. The server of claim 74, further comprising:

a detector for detecting port number for receiving the range detection packet for detecting the range of ports including the port assigning packet transmitting port and detecting the position of the port of the second communication control unit

25   allowing to pass the range detection packet,

a detection port information transmitter for transmitting the detection port information showing the position of the port detected by the detection port detector to the second information processor, and

a target port receiver for transmitting bubble packet for receiving the target

5   port information for transmitting bubble packet showing the range of ports including the port assigning packet transmitted from the second information processor,

wherein the target port transmitter for transmitting bubble packet transmits the target port information for transmitting bubble packet received in the target port receiver for transmitting bubble packet.

10   76. The server of claim 74, further comprising:

a range detector for receiving the range detection packet for detecting the range of ports including the port assigning packet transmitting port and detecting the range of ports including the port assigning packet transmitting port,

wherein the target port transmitter for transmitting bubble packet transmits the

15   target port information for transmitting bubble packet on the basis of the range of ports detected by the range detector.

77. The server of any one of claims 74 to 76, further comprising:

a port number differential information detector for receiving the port number differential detection packet for detecting the port number differential in the second

20   communication control unit transmitted from the second information processor by way of the second communication control unit and detecting the position of the port in the second communication control unit allowing to pass the port number differential detection packet on the basis of the port number differential detection packet, and

25   a port number differential information transmitter for transmitting the port

number differential information showing the position of the port detected by the port number differential information detector to the second information processor.

78. The server of any one of claims 74 to 76, further comprising:

a port number differential detector for receiving the port number differential

5   detection packet for detecting the port number differential in the second communication control unit transmitted from the second information processor by way of the second communication control unit and detecting the port number differential in the second communication control unit on the basis of the port number differential detection packet, and

10   a port number differential information transmitter for transmitting the port number differential information as the information showing the port number differential in the second communication control unit detected by the port number differential detector to the first information transmitter.

79. The communication method of claim 25, wherein the bubble packet

15   transmitting step is characterized by transmitting the bubble packet to one or more ports.

80. The program of claim 41, wherein the target port information for transmitting bubble packet is the information showing the position of one or more target ports for transmitting bubble packets, and

20   the bubble packet transmitting step is characterized by transmitting the bubble packets to one or more target ports for transmitting bubble packets indicated by the target port information for transmitting bubble packet.

81. The program of claim 48, wherein the computer further executes a port assigning packet transmitting step of transmitting a port assigning packet for

25   assigning the port for transmitting the reply packet in the first communication

control unit, and

the reply packet transmitting step is characterized by transmitting the reply packet from the port of the first information processor receiving the port assigning packet.

5   82. The program of claim 81, wherein the computer further executes a range detection packet transmitting step of transmitting the range detection packet used in detection of range of ports including the port assigning packet transmitting port as the port in the first communication control used in transmission of the port assigning packet.

10   83.   A communication system comprising an information processor, a communication control unit for controlling the communication of the information processor and a server,

wherein the information processor includes:

a bubble packet transmitter for transmitting one or more bubble packets for

15   leaving the transmission record in the communication control unit by way of the communication control unit, and

a range detection packet transmitter for transmitting the range detection packet used in detection of range of ports including one or more bubble packet transmitting ports as the ports in the communication control unit used in transmission of one or

20   more bubble packets to the server, and

the server includes:

a range detector for receiving the range detection packet and detecting the range of ports including one or more bubble packet transmitting ports on the basis of the range detection packet.

25   84.   The communication system of claim 83, wherein the server further

includes a range transmitter for transmitting the range information as the information showing the range of ports including the one or more bubble packet transmitting ports detected by the range detector.

85. A communication system comprising an information processor, a communication control unit for controlling the communication of the information processor and a server,

wherein the information processor includes:

a bubble packet transmitter for transmitting one or more bubble packets for leaving the transmission record in the communication control unit by way of the communication control unit,

a range detection.packet transmitter for transmitting the range detection packet used in detection of range of ports including one or more bubble packet transmitting ports as the ports in the communication control unit used in transmission of one or more bubble packets to the server,

a detection port information receiver for receiving the detection port information showing the position of the port of the communication control unit allowing to pass the range detection packet, and

a range detector for detecting the range of ports including the one or more bubble packet transmitting ports on the basis of the detection port information received in the detection port information receiver, and

the server includes:

a detector for detecting port number for receiving the range detection packet and detecting the position of the port of the communication control unit allowing to pass the range detection packet, and

a detection port information transmitter for transmitting the detection port

information showing the position of the port detected by the detection port detector to the information processor

86.   The communication system of claim 85, wherein the information processor further includes a range transmitter for transmitting the range information as the information showing the range of ports including the one or more bubble packet transmitting ports detected by the range detector.

87.   The communication system of claim 84 or 86, further comprising:

a second information processor including a range receiver for receiving the range information, and

a reply packet transmitter for transmitting a reply packet to the ports in the range indicated by the range information,

wherein the information processor further includes a reply packet receiver for receiving the reply packet transmitted from the second information processor.

88.   The communication system of claim 83 or 85, wherein the range detection packet transmitter transmits the range detection packet before and after transmission of one or more bubble packets by the bubble packet transmitter.

89.   The communication system of claim 88, wherein the range detection packet transmitter transmits the range detection packet to different addresses before and after transmission of one or more bubble packets.

90.   The communication system of claim 88, wherein the range detection packet transmitter transmits the range detection packet using the ports newly assigned in the information processor before and after transmission of one or more bubble packets.

91. The communication system of claim 83 or 85, wherein the server further includes:

a target port transmitter for transmitting bubble packet for transmitting the target port information for transmitting bubble packet showing the position of the target port for transmitting bubble packet as the port of target of transmission of one or more bubble packets to the information processor,

5   the information processor further includes:

a target port receiver for transmitting bubble packet for receiving the target port information for transmitting bubble packet, and

the bubble packet transmitter transmits one or more bubble packets to the target port for transmitting bubble packet indicted by the target port information for

10   transmitting bubble packet.

92. An information processor for composing a communication system of claim 83 or 85.

93. A second information processor for composing a communication system of claim 87.

15   94. A server for composing a communication system of claim 83 or 85.

95. A communication method used in a communication system comprising an information processor, a communication control unit for controlling the communication of the information processor and a server, comprising:

a bubble packet transmitting step of transmitting one or more bubble packets

20   for leaving the transmission record in the communication control unit from the information processor to the communication partner side by way of the communication control unit, and

a range detecting step of detecting the range of ports including one or more bubble packets as the ports in the communication control unit used in transmission

25   of one or more bubble packets.

96. The communication method of claim 95, wherein the range detecting step further includes:

a step of transmitting a first range detection packet used in detection of range from the information processor to the server before transmission of one or more

5   bubble packets,

a step of receiving the first range detection packet by the server and detecting the position of the port of the first communication unit used in transmission of the first range detection packet,

a step of transmitting a second range detection packet used in detection of

10   range from the information processor to the server after transmission of one or more bubble packets, and

a step of receiving the second range detection packet by the server and detecting the position of the port of the communication unit used in transmission of the second range detection packet.

15   97. A communication method used in an information processor for composing a communication system comprising an information processor, a communication control unit for controlling the communication of the information processor and a server, comprising:

a bubble packet transmitting step of transmitting one or more bubble packets

20   for leaving the transmission record in the communication control unit by way of the communication control unit, and

a range detection packet transmitting step of transmitting a range detection packet used in transmission of range of ports including one or more bubble packet transmitting ports as ports in the communication control unit used in transmission of

25   one or more packets.

98. The communication method of claim 97, further comprising:

a detection port information receiving step of receiving the detection port information showing the position of the port of the communication control unit allowing to pass the range detection packet, and

5 a range detecting step of detecting the range of ports including one or more bubble packet transmitting ports on the basis of the detection port information received at the detection port information receiving step.

99. The communication method of claim 98, further comprising:

a range transmitting step of transmitting the range information as the

10 information showing the range of ports including the one or more bubble transmitting ports detected at the range detecting step.

100. A communication method used in a server for composing a communication system comprising an information processor, a communication control unit for controlling the communication of the information processor and a

15 server, comprising:

a range detecting step of receiving a range detection packet transmitted from the information processor used in detection of range of ports including one or more bubble packet transmitting ports as the ports in the communication control unit used in transmission of one or more bubble packets transmitted for leaving transmission

20 record in the communication control unit, and detecting a range of ports including one or more bubble packet transmitting ports on the basis of the range detection packet, and

a range transmitting step of transmitting the range information as the information showing the range of ports including one or more bubble packet

25 transmitting ports detected at the range detecting step.

101.   A communication method used in a server for composing a communication system comprising an information processor, a communication control unit for controlling the communication of the information processor and a server, comprising:

5   a detection port detecting step of receiving a range detection packet transmitted from the information processor used in detection of range of ports including one or more bubble packet transmitting ports as the ports in the communication control unit used in transmission of one or more bubble packets transmitted for leaving transmission record in the communication control unit, and

10   detecting the position of the port of the communication control unit allowing to pass the range detection packet, and

a detection port information transmitting step of transmitting the detection port information showing the position of the port detected at the detection port detecting step to the information processor.

15   102.   A program for causing a computer to execute the process in an information processor for composing a communication system comprising an information processor, a communication control unit for controlling the communication of the information processor and a server, wherein the computer executes:

20   a bubble packet transmitting step of transmitting one or more bubble packets for leaving the transmission record in the communication control unit by way of the communication control unit, and

a range detection packet transmitting step of transmitting the range detection packet used in detection of range of ports including one or more bubble packet

25   transmitting ports as the ports of the communication control unit used in

transmission of one or more bubble packets.

103. The program of claim 102, wherein the computer further executes:

a detection port information receiving step of receiving the detection port information showing the position of the port of the communication control unit

5   allowing to pass the range detection packet, and

a range detecting step of detecting the range of ports including one or more bubble packet transmitting ports on the basis of the detection port information received at the detection port information receiving step.

104. The program of claim 103, wherein the computer further executes:

10   a range transmitting step of transmitting the range information as the information showing the range of ports including one or more bubble packet transmitting ports detected at the range detecting step.

105. A program for causing a computer to execute the process in a server for composing a communication system comprising an information processor, a

15   communication control unit for controlling the communication of the information processor and a server, wherein the computer executes:

a range detecting step of receiving the range detection packet transmitted from the information processor used for detecting the range of ports including one or more bubble packet transmitting ports as ports of the communication control unit

20   used in transmission of one or more bubble packets transmitted for leaving the transmission record in the communication control unit, and detecting the range of ports including one or more bubble packet transmitting ports on the basis of the range detection packet, and

a range transmitting step of transmitting the range information as the

25   information showing the range of ports including one or more bubble packet

transmitting ports detected at the range detecting step.

106. A program for causing a computer to execute the process in a server for composing a communication system comprising an information processor, a communication control unit for controlling the communication of the information

5 processor and a server, wherein the computer executes:

a detection port detecting step of receiving the range detection packet transmitted from the information processor used for detecting the range of ports including one or more bubble packet transmitting ports as ports of the communication control unit used in transmission of one or more bubble packets

10 transmitted for leaving the transmission record in the communication control unit, and detecting the position of the port of communication control unit allowing to pass the range detection packet, and

a detection port information transmitting step of transmitting the detection port information showing the position of the port detected at the detection port detecting

15 step to the information processor.